

## Claims

What is claimed is:

1. A method of analyzing a polyionic molecule by mass spectrometry, the method comprising steps of:
  - 5 providing a polyionic molecule;
  - attaching at least one charged tag to the polyionic molecule to produce a polyionic molecule/tag adduct, wherein the net charge on the adduct differs from that of the polyionic molecule; and
  - 10 analyzing the adduct by mass spectrometry.
2. A method of analyzing a collection of polyionic molecules by mass spectrometry, the method comprising steps of:
  - 15 providing a collection of polyionic molecules, wherein the molecules have different charges;
  - attaching at least one charged tag to each polyionic molecule to produce a collection of polyionic molecule/tag adducts, wherein the net charge on each adduct differs from that of each corresponding polyionic molecule; and
  - 20 analyzing the collection of adducts by mass spectrometry.
3. A method of claim 1 wherein the step of providing comprises incorporating a charged tag into the polyionic molecule during synthesis of the molecule.

4. A method of claim 1 wherein the step of providing comprises providing a polynucleotide.
5. A method of claim 1 wherein the step of providing comprises providing a protein.
6. A method of claim 1 wherein the step of attaching comprises attaching at least one positively charged tag.
- 10 7. A method of claim 1 wherein the step of attaching comprises attaching at least one negatively charged tag.
8. A method of claim 1 wherein the step of attaching comprises attaching at least one tag having both negatively and positively charged groups.
- 15 9. A method of claim 1 wherein the step of attaching comprises attaching a tag having at least one quaternary ammonium group.
10. A method of claim 1 wherein the step of attaching comprises attaching the tag by a covalent bond.
- 20 11. A method of claim 1 wherein the step of attaching comprises attaching more than one tag.

12. A method of claim 1 wherein the step of attaching comprises attaching the tag to anywhere on the molecule.
- 5                   13. A method of claim 1 wherein the step of attaching comprises attaching the same number of tags to each molecule.
- 10                 14. A method of claim 1 wherein the step of attaching comprises resulting in the net charge on the adduct being selected from the group consisting of +3, +2, +1, 0, -1, -2, or -3.
- 15                 15. A method of claim 1 wherein the step of attaching comprises resulting in the net charge on the adduct being a value other than +1 or -1.
- 20                 16. A method of claim 1 wherein the step of attaching comprises reducing the net charge on the adduct.
17. A method of claim 2 wherein the step of attaching comprises reducing the net charge on at least one of the adducts to a value of 0.
18. A method of claim 1 wherein the step of attaching comprises steps of:  
                    attaching a non-charged tag to the polyionic molecule; and  
                    modifying the tag to create charges on the tag.
19. A method of claim 18 wherein the step of the modifying comprises steps of:

deprotecting functional groups on the tag; and  
creating charges on tag after deprotection.

- 5           20. A composition comprising a polyionic molecule and tag, wherein the net charge of polyionic molecule/tag adduct differs from that of the polyionic molecule.